

Automatic SIM Block & Unblock, Trace a number & Emergency Utility Contact

A Thesis
Submitted to the Department of Computer Science of
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Foreword

The thesis report is submitted in partial fulfillment of the academic requirements for the degree of Bachelor of Science in Computer Science and Engineering to the Computer Science and Engineering Department at BRAC University, Dhaka, Bangladesh.

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As the supervisor and co-supervisor of the candidate we have approved this dissertation for submission.

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DECLARATION

I hereby, declare that this thesis is based on the research and hard work done by myself. The Thesis, neither in whole nor in part, has been previously submitted for any degree.

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Abstract

At every step in our daily life, keeping contacts with people is the most essential thing to do. For this we need to carry things that help us to communicate with others, like mobile devices. With such devices, we can make our life simpler. The system that I have proposed is not only a new system to come up in the mobile device but also would worth a lot for our country people by its services.

The significance of this proposed system can be understandable by its name - Automatic SIM Block and Unblock, Tracing a number and Emergency Utility Contact. It would allow customers to block or unblock their own SIM, to trace another being permitted mobile, or even would let one to know and inform about and to important utilities at emergency. All these procedures can be done from any mobile numbers, from anywhere at anytime. Hence providing more flexibility, less energy, expenses and time consuming, and even let the customer to feel secured about their own things. In every way the system would be very beneficial and profitable both to a user and an operator.

Introduction

Cell phones are carried by majority of the population around the world. It is one of the most useful and important device in our everyday life. Without it one could not imagine to lead an ease life. But, loosing SIM, or sets are being snatched by muggers, these are daily happenings in our country. Anyone can be the victim at anytime. For such situations, people lose their important contact numbers of friends, family, business partners and so on. Either the muggers would uses up the credits or could use the contact numbers for awful purposes, causing the victim to fall into trouble. Again, in some different situations, people often fall into trouble or better to say, tensions, when they do not see their dear ones coming back at home on time. They might make a call to him/her but what if they are not being told the true location. These are the problems often have to face, especially by the parents. Concerning again something different from the two above, there is also one of the terrible situations where people fall into trouble, like in case they are somehow got involved in an accident or seeing someone is having a heart attack. At these very situations, people either do not have or remember the emergency contact numbers. To give people ease, secured, tension free life in a better way, I would like to introduce the system - Automatic SIM Block and Unblock, Tracing number and Emergency Utility Contact.

The system carries four modules as it can be understandable by the name.

SIM Block – when SIM gets lost, anyone can block his/her SIM from any other mobile from anywhere at anytime, rather than going to the Service Offices.

SIM Unblock – would do the opposite that is to unblock the SIM in the same way. Only by answering few questions, one can have his/her SIM unblock without taking papers for verification to the Service Office. This would definitely take much less time, energy and of course expense.

Tracing number – people can be traced with this Trace module in the system. This is done by searching a mobile set with the help of the mobile number or IMEI (International Mobile Equipment Identity) number of the hand set. Tracing module would take place only between those two numbers that are permissible by one another.

Emergency Utility Contact – this module would help to get the contact numbers of the emergencies places or to inform them directly about the incident. No need of anyone to search or remember these numbers during incident.

The entire system has been discussed very briefly. All the communication between the Mobile Station (MS), the Service Operators and the Content Provider or CP have been done by using a certain port number, and all these would function at the backend; as the front end of the software will give only the interface to the user for the ease of usage. More details about all the modules are explained in the technical aspects section.

SIM Block/Unblock

SIM Block

People often block their SIM for many purposes. They might lose their set and want to block it, or could be like they just want to keep the SIM off for few days while using another SIM and after some days they unblock the SIM and start using it. To do this, blocking of a SIM, one needs to inform at the Operator's office. Even, simply for having fun, one can request at the Operator's office to block the SIM of others. Anyone can do this as there no verification is being done. To go at the Operator's office is quite energy, expenses and time consuming. The proposed system can accomplish this job with less effort and without much wastage of time. Anyone can block his/her own SIM only by a short message service (SMS) using any other mobile from anywhere at any time, provided the mobile set has the software being installed. It would be useful in such a way that no other person would be able to block the SIM as the person needs to go through some verification. The verification has been done for enhancing the security. The person who is requesting to do block of a SIM would need to provide PIN number along with some answers of certain questions to check whether this person is the right one to do the request.

The SIM Block module flows in software at three separate places – one at the MS, at the Operators' office and another one at the Content Provider (CP). At the MS, if anyone wants to use the software, he would need to choose the SIM Block/Unblock module. A form appears where he has to provide the PIN number of the SIM, answers of three questions and the number that is to be blocked then selects the either Block option. The questions that are to answered would be randomly selected by the software in the MS. The questions are as follows: Father's name, Mother's name, Birth date, Permanent address, Spouse's name and Contact's number (last two, if any given in the form). Such questions would not be asked that were optional or kept blanked in the registration form. The answers of all these questions were being given during the registration of the SIM and are kept at the Operator's database. Taken the PIN number, the

answers, and the number to be blocked, the MS sends the message to the Operator automatically. The Operator forwards the message to CP then from the CP to the specified operator. The specified operator looks for the number in their database, checks the PIN number and the answers for verification and does the operation as requested, that is, blocks the SIM and sends a confirmation message to the MS via CP and the user's operator.

The technical aspects cover even into more details about the module which is as follow. Let's say, an aktel_user lost his SIM and using a Teletalk number to BLOCK the SIM. As mentioned before the set has to have the software being installed. The user opens the software and go to the SIM Block/Unblock module, types the PIN number, answers three questions, and gives the aktel_number (to be blocked) and chooses the BLOCK option from the combo list. The MS holds the "BLOCK" in a header and as the user presses the "GO" button the MS software sends the message to the Operator at a certain port number automatically. The Teletalk Operator sees the port number and forwards the message to the CP. The CP reads the number (aktel_number) that is requested to be blocked and sends the entire message to the specified operator, in this case to Aktel Operator. The Aktel Operator verifies that whether the person, who has requested to block the SIM, is the right person to request it or not by matching the answers and the PIN numbers with their data that they have stored in their Customer Information Database (CID). The message is not to be of case sensitive. If the information does not match with their stored data, the Aktel Operator sends an error message to the user via first CP which then forwards to the Teletalk Operator. The user then gets the error message form the Teletalk Operator. However, if the information does match with their stored ones, they updates their Home Local Register (HLR) table by making the SIM deactivate and sending a confirmation message to the user. HLR is being updated in case of post-paid user, but if the user is pre-paid then Intelligence Network (IN) table is being updated. The proposed system has not made any differences between the

users but in the future implementation the differences between the post-paid and the pre-paid users would be taken into account.

SIM Unblock

To Unblock a SIM, one needs to go at the Operator's office with registration papers for verification and ask them to unblock it. For this the user needs to spend transportation cost, energy, and nevertheless his valuable time. All these can be saved if the user uses the proposed system with which he would be able to make his SIM unblock by using any other mobile from anywhere at anytime. To Unblock a SIM, the entire procedure is more or less same as SIM Block module. The user needs to go to the SIM Block/Unblock module, enter PIN number and the number to be unblocked, answers three questions and selects UNBLOCK option then presses "GO" button. At this point the software in the MS would show a message about the charge that usually needed while unblocking a SIM. If the user presses "NO" option, the software goes back to the same page without performing any further action. Otherwise, if "YES" has been pressed, the MS would proceed as explained before. That is, the MS sends the message to the Teletalk Operator which forwards to CP by seeing the port number. CP reads the aktel_number and forwards to the Aktel Operator. This Operator verifies the messenger by the PIN numbers and the answers. If wrong messenger then Operator sends an error message to the user. And if the messenger is found right ones, then updates the HLR table and the credit of the user and sends a confirmation message to the CP. CP forwards the message to the Teletalk Operator. Teletalk Operator forwards it to the MS; hence the user sees the confirmation message that – the SIM has been made active and the credit is updated as required. About the charge, if there is zero balance or not sufficient balance in the user's account then Operator would update the credit into negative balance. So that when the user refills the credits, the amount would then be deducted by the negative value and so on. This means that if the user's credit is not sufficient to cover the unblock charge then the credit will be negative after updating. When the user refills his account then the negative balance will be deducted from the refill amount as required. If the user has sufficient amount in his account then the unblock charge will be deducted from there and the credit

amount will be updated. In both the cases the user will be notified about his account balance.

Trace a number

Trace a number

No one would be able to tell what might happen when one goes out of his home. People often fall into incidents like, political violence that might occur at any sudden. Sometimes, it becomes necessary for some people to get to know where their dear ones actually are. Especially for the parents whose children go alone for their studies and might fall into such situations, or even they might go to some other places apart from their study centre. The children often lie to their parents about their hanging places, or it could be like, the children come late at home which causes the parents to stay in concern. There is no way to know where they are, unless you make a call to them. But what if they do not tell their parents the truth, what if they say they are at their school but actually they are somewhere else. To know the actual location of a person is not possible till now but the proposed system would be capable of doing all these jobs. That is, it would be able to trace a person within a second or so by just only sending a short message service (SMS).

The proposed system has a TRACE module that runs in software at different places – one at the MS, at the Operators' office, another at the Content Provider or CP. At the MS, the user selects the TRACE module, gives the number to be traced and presses the "Trace" button. The Operator gets the message and forwards it to CP which then gives it to the Specified Operator according to the number. The specified operator gets the name of the location and time from their database and sends back to the MS through CP and the user's operator. But, the TRACE module of the system would work only for some specific person, not for everyone. Before one could trace the location of a person he needs to be authenticated by the person who is being traced. The authentication process would be done only at one time. Once the person is authenticated he does not have to go through the process again. He can trace that person whenever he wants to.

The authentication process works as follow: let say, an aktel_user wants to trace a person who uses teletalk services, teletalk_user. For that the teletalk_user selects the “Allow” option from the TRACE module in the software, where a text pad appears, he writes the number of the aktel_user and press ALLOW button. The software automatically sends this message to the Teletalk Operator at a certain port number. When the Operator sees the port number, it forwards the message along with the teletalk_user’s number to the Content Provider (CP). The CP has a table, named ALLOWED where all the authenticated numbers are being stored against the number that has send the message. In this ALLOWED table the CP stores the aktel_user’s number against the teletalk_user’s number and sends a confirmation message to the Operator. In which case the Operator forward it to the user. In such way, the teletalk_user can sends three people’s number to store and these three people can trace him as often as they want and at any instant. The following part would cover the entire procedure of the TRACE module into more technical way.

Again let’s say the aktel_user has the authentication to trace the teletalk_user. The aktel_user opens the software and chooses the TRACE option. A box appeared where the teletalk_user’s number is to be inserted to trace and then pressed the TRACE button. At the back end, the software holds “TRACE” in a header and automatically sends the message along with the header to the Aktel Operator at a certain port number. When the Aktel Operator sees this port number, it forwards the header and both, aktel_user’s and teletalk_user’s, numbers to the CP. The CP knows what to do by seeing the header. It takes the first number (aktel_user’s number) and second number (teletalk_user’s number), and checks whether the first number is being allowed to trace by the second number. That is, the CP checks whether the aktel_user’s number is in the allow list against this teletalk_user’s number in the ALLOWED table. If the aktel_user is not allowed then it gives a message that – he is not into his allow list, to the sender (aktel_user) via the Operator. However, if CP finds that the aktel_user is authenticated then CP sends the teletalk_user’s number along with the header to

the Teletalk Operator. The Teletalk Operator checks its Virtual Location Register (VLR) to see the location of this number. The VLR keeps the information about the location and time of those numbers which are activated and updates these data after every 30 minutes. From VLR, it can be found under which Base Transceiver Station (BTS) the number is being activated. Hence the Teletalk Operator gets the location name and time and sends message to the CP which would then forwarded to the Aktel Operator. The Aktel Operator gives message to the aktel_user that – “teletalk_user's number” has been seen in “location_name” at “time”.

But a different situation can happen, where the teletalk_user might keep his phone off or he might not be under network coverage or even he could use another number on that time, for more than 30 minutes then the VLR of Teletalk Operator would not be able to keep any details of this number. In such case, the Teletalk Operator would search their Home Location Register (HLR), where all the information of all users is kept. The register includes – time and place when last seen, International Mobile Equipment Identification (IMEI) number of the hand set against that number etc. The Operator then extracts the IMEI number, last_seen_time and last_seen_place against the number. It then gives to the CP the IMEI number and the header. The CP keeps the last_seen information and forwards the header and the IMEI number to all other Operators except Teletalk. Seeing the header – TRACE, other Operators go through the same procedure that is, they check their HLR to see if any of their users is activated with this IMEI number. If there is no one with this IMEI number, the Operator gives a negative result to the CP. The CP forwards the last seen information only to the Aktel Operator. The Aktel Operator sends the message to the aktel_user that reads - “teletalk_user's number” has been seen in “location_name” at “time”.

But if any of the Operators finds that the IMEI number is activated under their network then it extracts this “new_number”, “new_place” and “new_time” and forwards it to the CP. The CP merges the two messages – current seen and last

seen, and forwards it to the Aktel Operator. The Aktel Operator sends the message to the aktel_user that – “teletalk_user’s number” has been last seen in “last_seen_place” at “last_seen_time”. But it is now in “new_number” number in “new_place” at “new_time”.

Emergency Utility Contact

Emergency Utility Contact

Usually it is seen that most of the people do not know the number of important utilities, as a result in case of emergency they are not able to get the help on time. If we get involved in an accident or seeing someone needs help we find ourselves looking for the contact numbers to inform at the emergencies offices, meanwhile even more bad things might happen. This is usual tale in our life that either people do not know any contact numbers or if they knew, they usually forget during emergency. And also this is not possible for one to remember all these important numbers. At present, if one calls at Grameen Phone (GP) and asked for any emergency numbers, they will provide the contacts numbers with which one can inform at the emergency office. This would be time consuming as he first needs to call at the GP to have the emergency number and then can make call at the emergencies office for help. But the proposed system can perform this job with only a short message service (sms). The system has the ability to inform different emergency utilities, like – RAB, BTTB, Fire, Hospital, Police, TITAS, WASA. I have worked with only two out of these utilities, RAB and Hospital, and others would be implemented in future in the same procedure as these two. The system also needs to provide the name of the area, like – Dhanmondi, Dhaka University, Gopibag, Gulshan, Mirpur, Shahabagh etc., where the incident is being taken place. At the emergency places there must be a MS with a device that would make an alert sound and provide the information about where the incident is happening.

To accomplish the job of the Emergency Utility Contact Module, the software would need to flow in four separate places – at the MS, Operator's site, Content Provider or CP and at the emergency places. The module works as follows: The user opens the software in the MS and selects the "Emergency Utility Contact" Module. A form appears, where the user chooses the utility name, then selects the option - between the two, either to inform them or to have their contact number only, chooses the area name, and lastly provides the landmark of that

area which is not necessary, this field is optional. If the user chooses to have their contact number then he would get a reply message containing the utility's contact numbers and addresses. Or if the user wants to inform them then he needs to select the "Inform about an incident" option. After everything is being selected, the user presses the "GO" button and the MS automatically sends the message to the Operator at the certain port including the "UTIL" header. The Operator gets the message from the MS and forwards it to the CP due to the port number. The CP checks the header, UTIL, and starts working with the Hospital/RAB Information Table. CP reads whether the user wanted only the contact numbers. If it is, the CP gets the address, contact numbers of the utility and return the message to the MS through the operator. Otherwise, CP extracts the number of the utility under the ICE (In Case of Emergency) field against the given area in the Information Table. CP then sends message to a MS at the emergency place with this number. The MS would have been connected to a device which would make an alert sound and provide the information of the incident that was send by the user. Meanwhile, the CP also sends a confirmation message to the user via the operator that his information has been sent to the emergency place.

In the proposed system, the area of the user could have been traced with the help of Base Transceiver Station or BTS. But the auto detection process of the area has been not considered for three cases that might occur during the incident. The cases are described as below:

Case 1: Let's say there are two areas, area1 and area2, having a BTS on each. RAB, RAB1 and RAB2, are on charge of these two areas respectively. The user, who is in area1, gets involved to an incident and wants to inform RAB. He might be in such a place that both the BTS covers-up, known as overlap zone (shaded region in the figure). But he is supposed to inform RAB1 as he is in area1. If all the channels of the BTS in area1 are busy or if the signal strength of BTS of area2 dominates that of area1 then the BTS in area2 would be covering him, in which case, the user would be considered under the BTS of area2. In auto detection process, area2 is going to be detected which would have been wrong. As area2 BTS is detected so the automatic system will inform the RAB2 instead of RAB1, which would not be the right one. As a result RAB2 will have a false alarm and the victim will not receive any help regarding her incident, as RAB1 is not being informed.

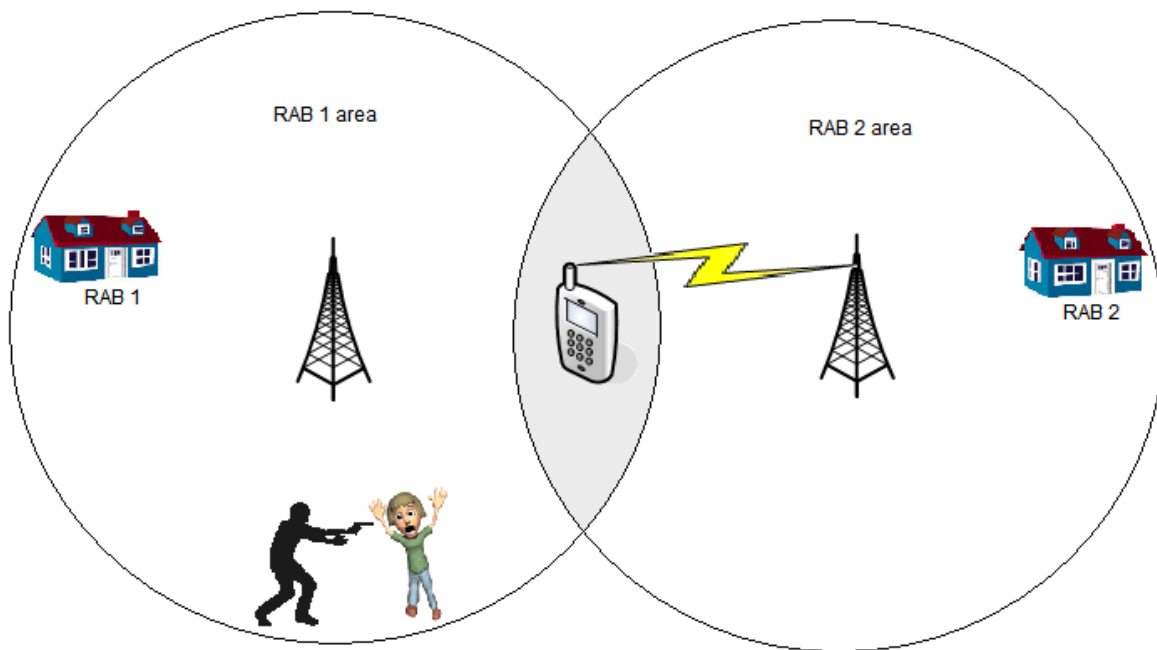


Figure 1

Case 2: Let's say again that the user is in area1 and wants to inform RAB1. But if the strength of the BTS in area2 is greater than the area1 or all the channels of BTS of area1 are busy, then the user would be considered under BTS of area2. This would also have been wrong as the incident is not taking place in area2 and RAB2 will be informed incorrectly. As before the victim would not be helpful as RAB1 is not informed and RAB2 will be having a false alarm.

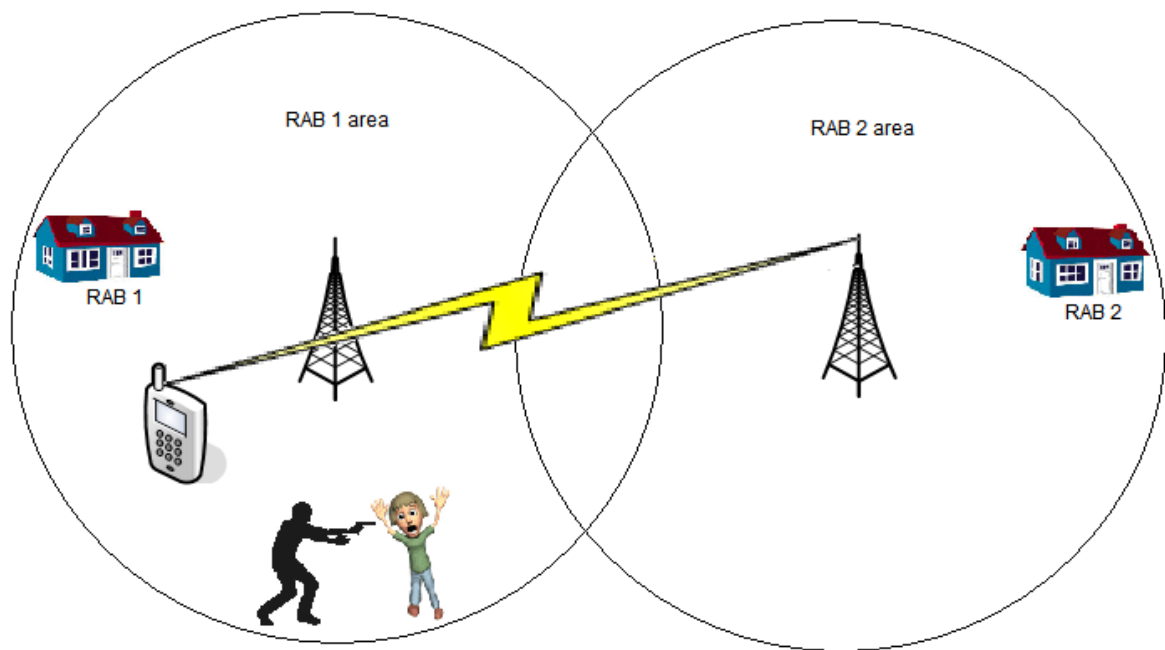


Figure 2

Case 3: Let's say a house in area1 gets fire. The user, who is in area2, is closer to that incident and wants to inform the Fire Service Station. In auto detection process, the user would have been seen under the BTS of area2 and the Fire Station2 would have been informed. But for this situation the Fire Station1 is suppose to be informed about the incident. So if auto detection is applied here then no one can help others who are under another BTS. So here the house will not receive any help by the user.

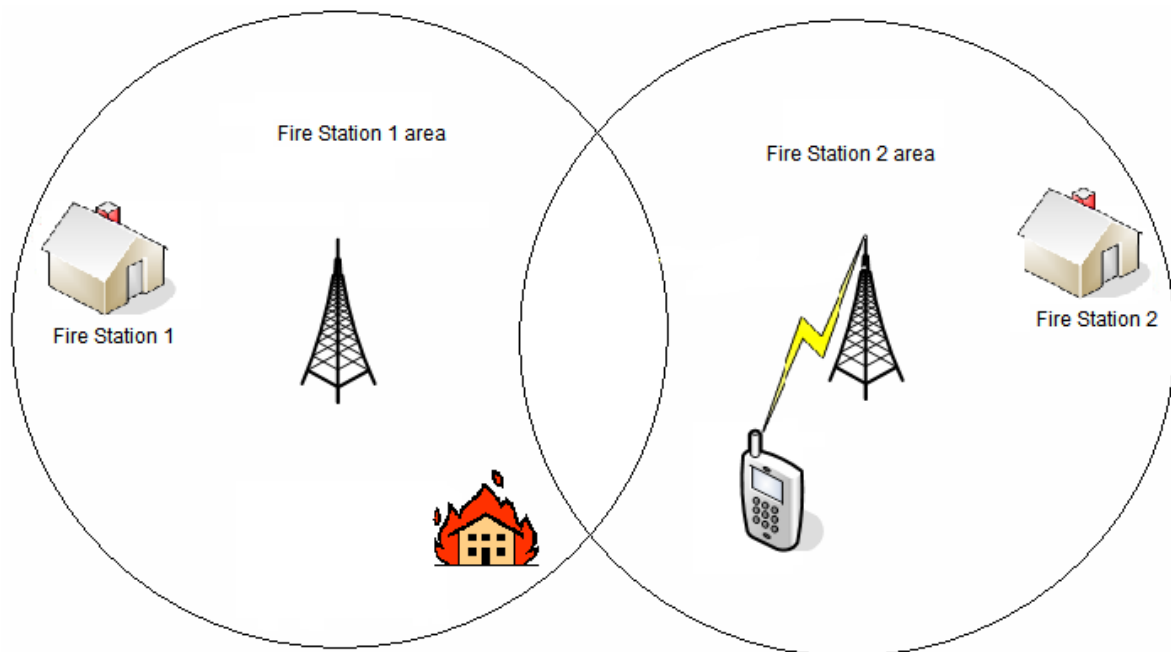


Figure 3

These are the reasons why auto detection of the area is not considered so that the user can provide the actual location of the incident. Initially some areas of Dhaka are taken into consideration as the areas that a user should choose among for this module. The name of the utilities is given in Table 1 and the name of the areas is given in Table 2.

Table 1. Name of utilities

BTTB	Fire	Hospital	Police	RAB
Titas	Wasa			

Table 2. Name of areas

Agargaon	Airport	Banani	Demra	Dhaka University
Dhanmondi	Elephant Road	Golapbagh	Gopibag	Gulistan
Gulshan 1	Gulshan 2	High Court	Jatrabari	Khilgaon
Mirpur 1	Mirpur 10	Mohakhali	Motijheel	Nazimuddin Road
Postokhola	Ramna	Rampura	Shahabagh	Shamoli
Science Laboratory	Tejgong	Uttara		

Software flowchart

SIM Block and Unblock flowchart explanation

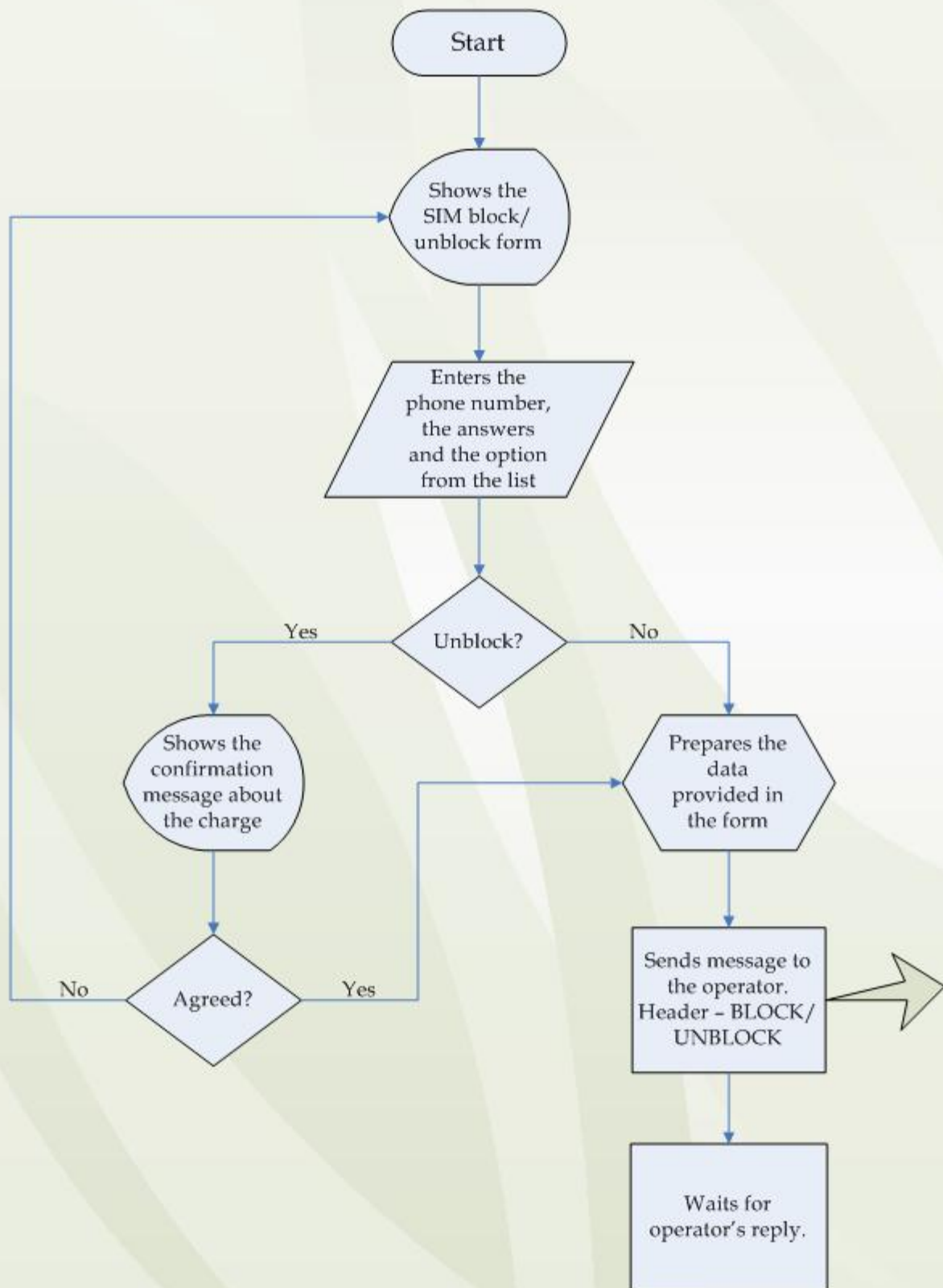
In this section the flowcharts of SIM block/unblock has been explained. For this please refer to the flowcharts that follows this page.

The user needs to give the necessary inputs after the choosing this option from the start up menu. The inputs are the number that is to be block or unblock, choose the option and answers of the questions. After answering when pressed to proceed then the software checks whether this is for unblocking or not. If unblocking then an extra message of charge will be shown and if the user agrees then the software will follow the path of the block. Else the software will arrange the information provided according to the format that the software support. Here a header, BLOCK or UNBLOCK, is added to tell the software about what the request is for. After that it sends the message to the operator and waits for the reply.

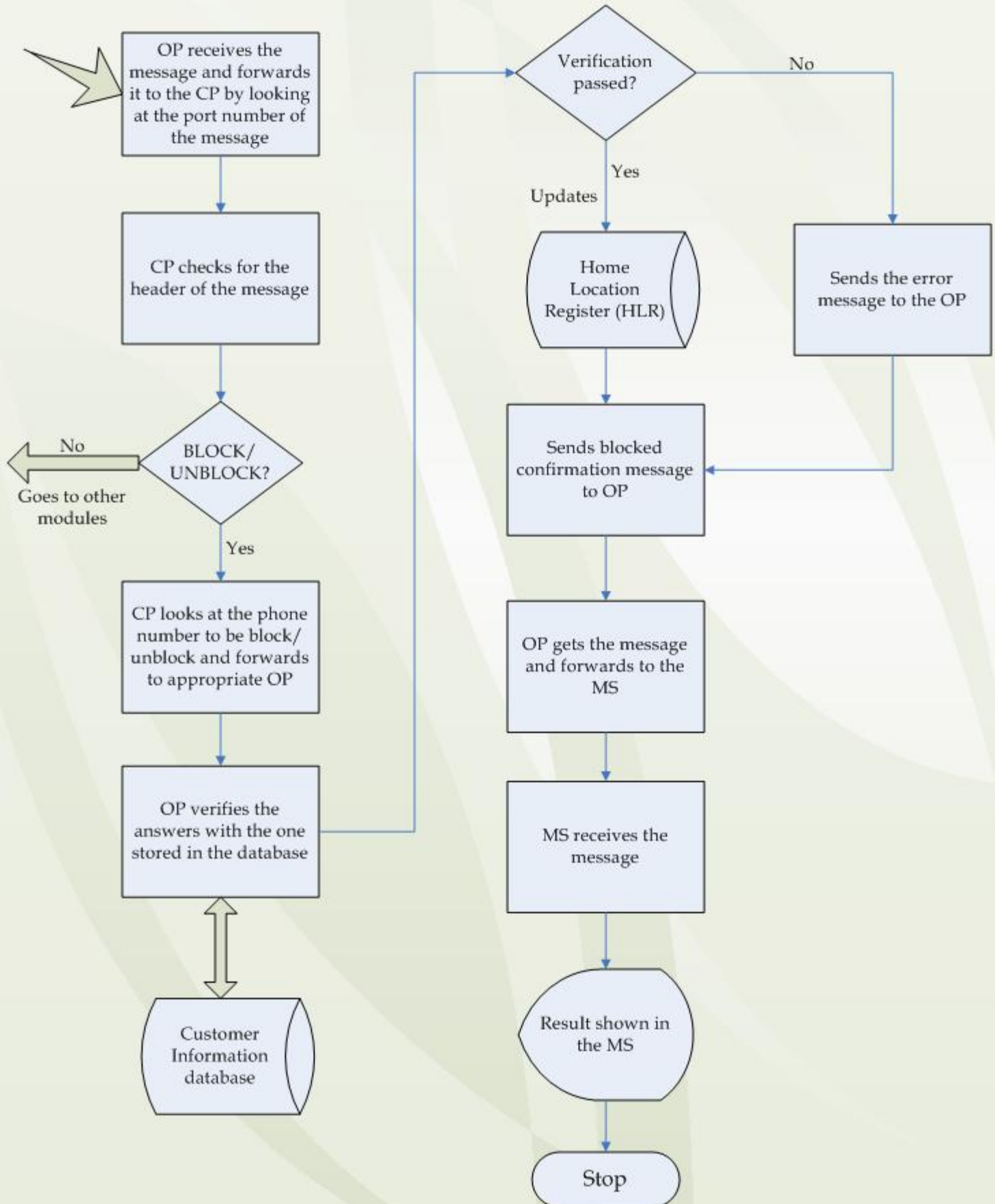
After the operator receives the message it looks for the port number and forwards it as the port number suggests. When the CP receives the message is looks at the header of the message. If the header is BLOCK or UNBLOCK then it proceed further else it diverse to other modules. Here the header is BLOCK or UNBLOCK, so it proceed. Next the CP looks at the phone number on which the action to be taken and forwards the whole message to the operator that belongs the number.

When the operators have the message it will check the answers of the questions with the data that are stored in their database against that subscriber. If the verification is right then a confirmation message is send back to the sender else an error message is send to the sender. The sender on getting the error message can again try to perform the action for two more times. If he or she is successful in these time then the action will be taken else this function will stop for this particular subscriber for next 24 hour.

SIM Block/Unblock



SIM Block/Unblock (cont.)



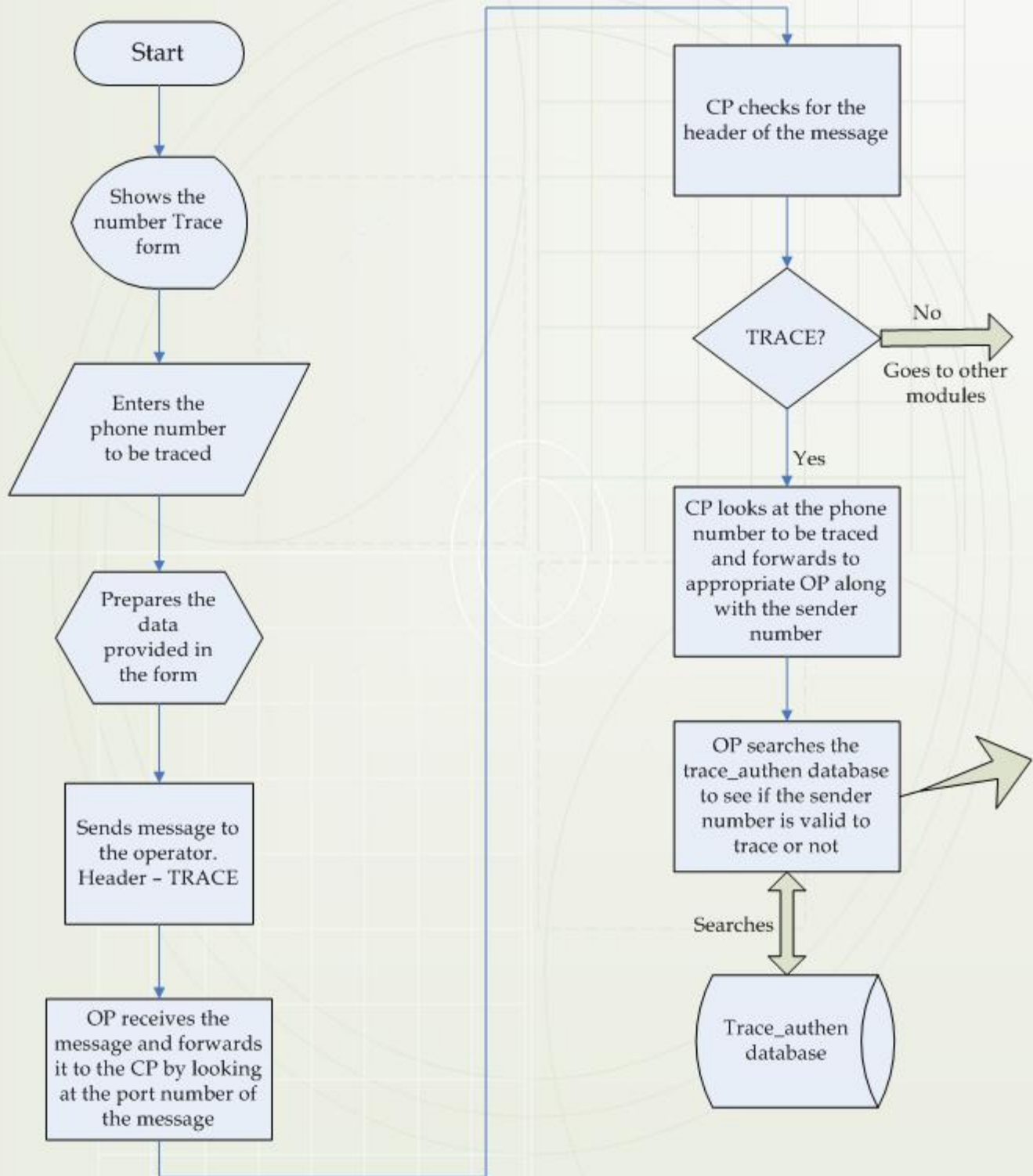
Trace a number flowchart

As before, after clicking the button from the main menu this module activates. After inserting the data in the form, that is the phone number to be traced, the user presses go button. On pressing the button the software prepares the data as required and sends to the OP. In this case the header is TRACE.

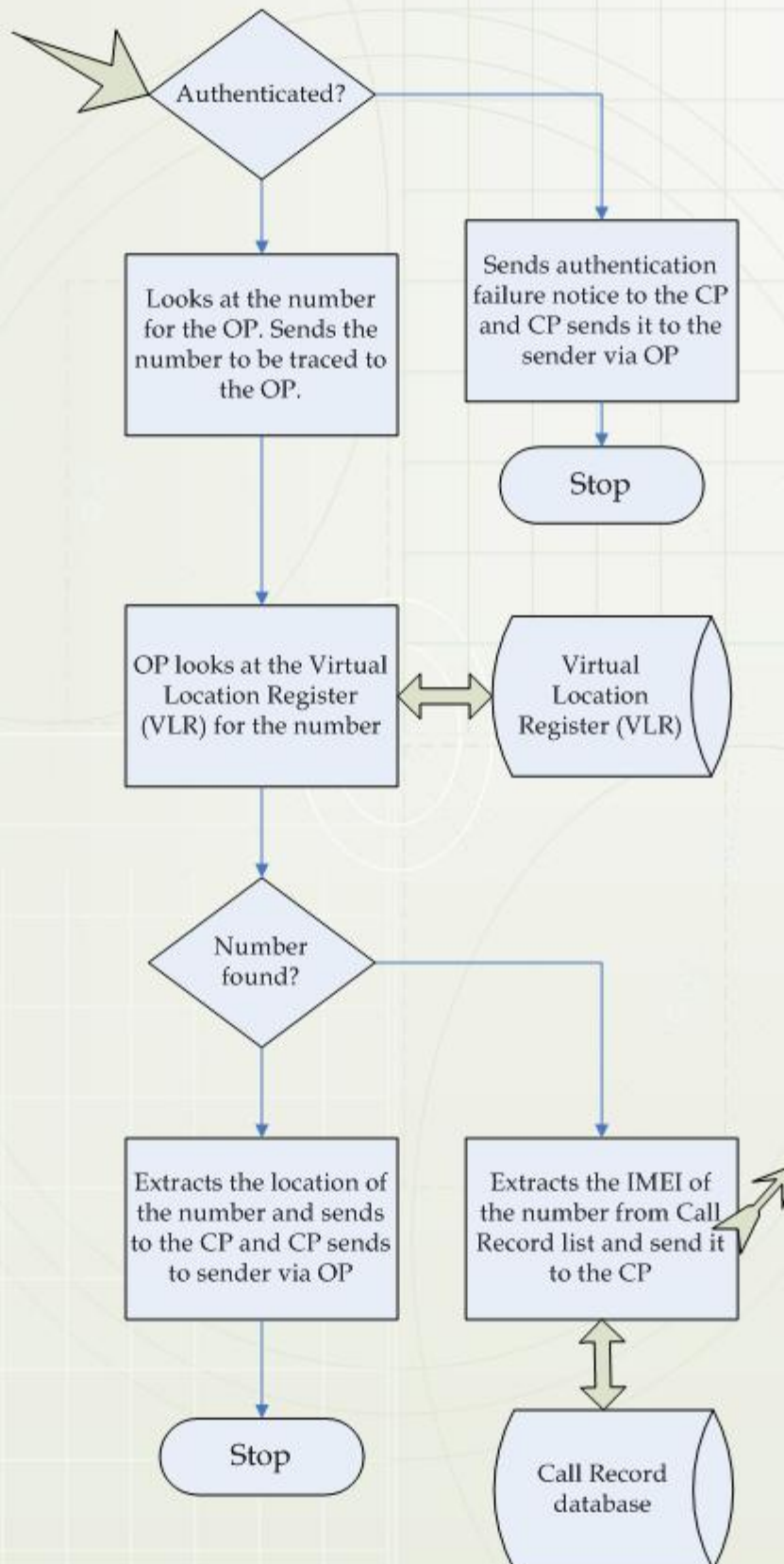
After looking at the port number, as before OP forwards the message to appropriate port. When the CP gets the message and checks the header then it performs the same task as previous one. When TRACE header is found then the CP checks the allowed table to see if the person is authenticated to trace or not. If not an error message will be sent, else CP will forward the message to the appropriate OP by looking at the phone number.

When OP receives the message it looks at the VLR and if found then sends reply to the sender. Else if not found then looks at the call records list for IMEI and returns to CP. Then the CP forwards the IMEI to all other OP. OP look at their call record for the match of the IMEI. If found then it extracts the phone number from there. Else it sends a negative reply to the sender. When the phone number is found then the OP looks at its VLR for the location of the number and then sends to the sender and the process terminates.

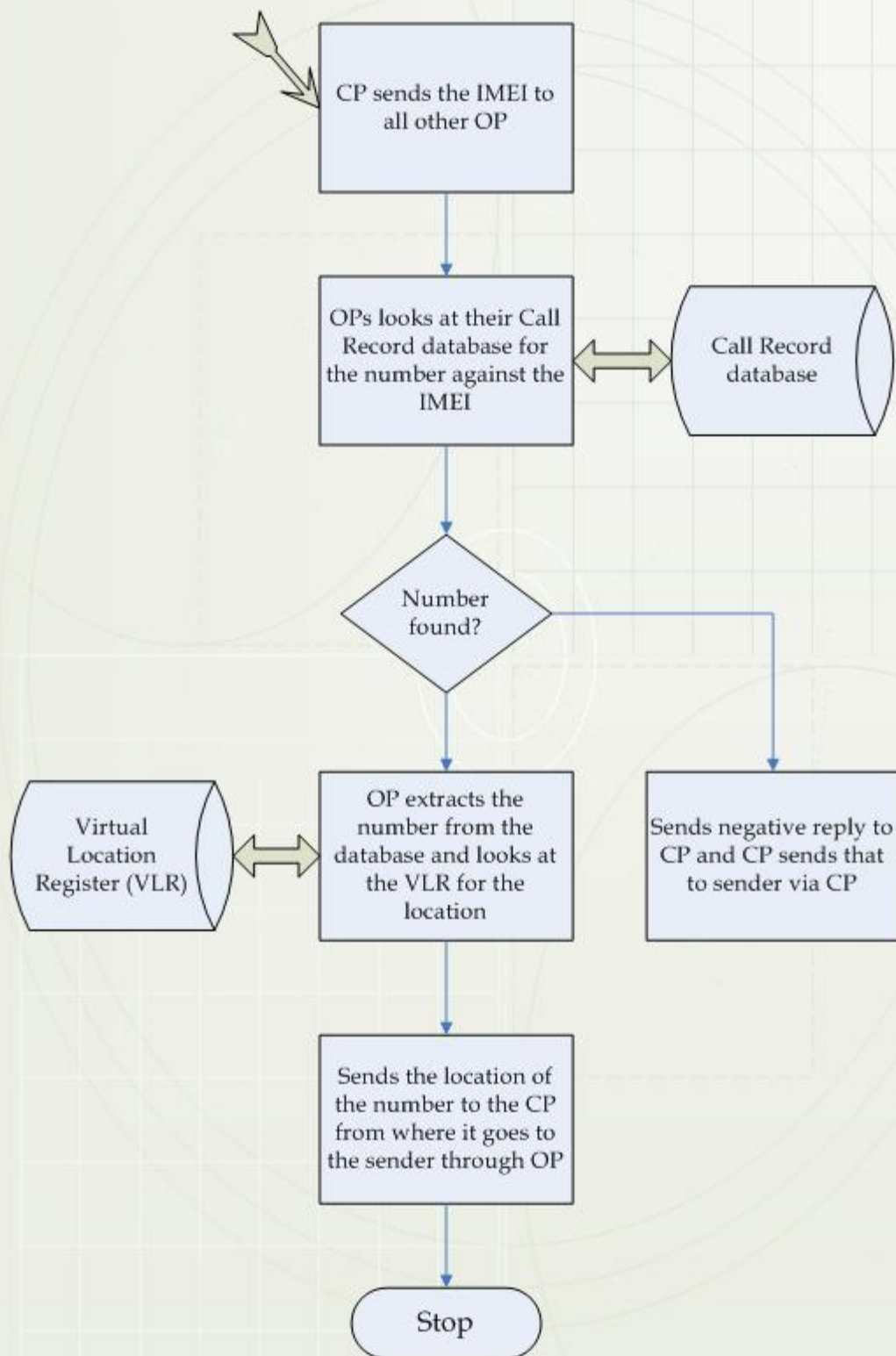
Trace a number



Trace a number (cont)



Trace a number (cont)

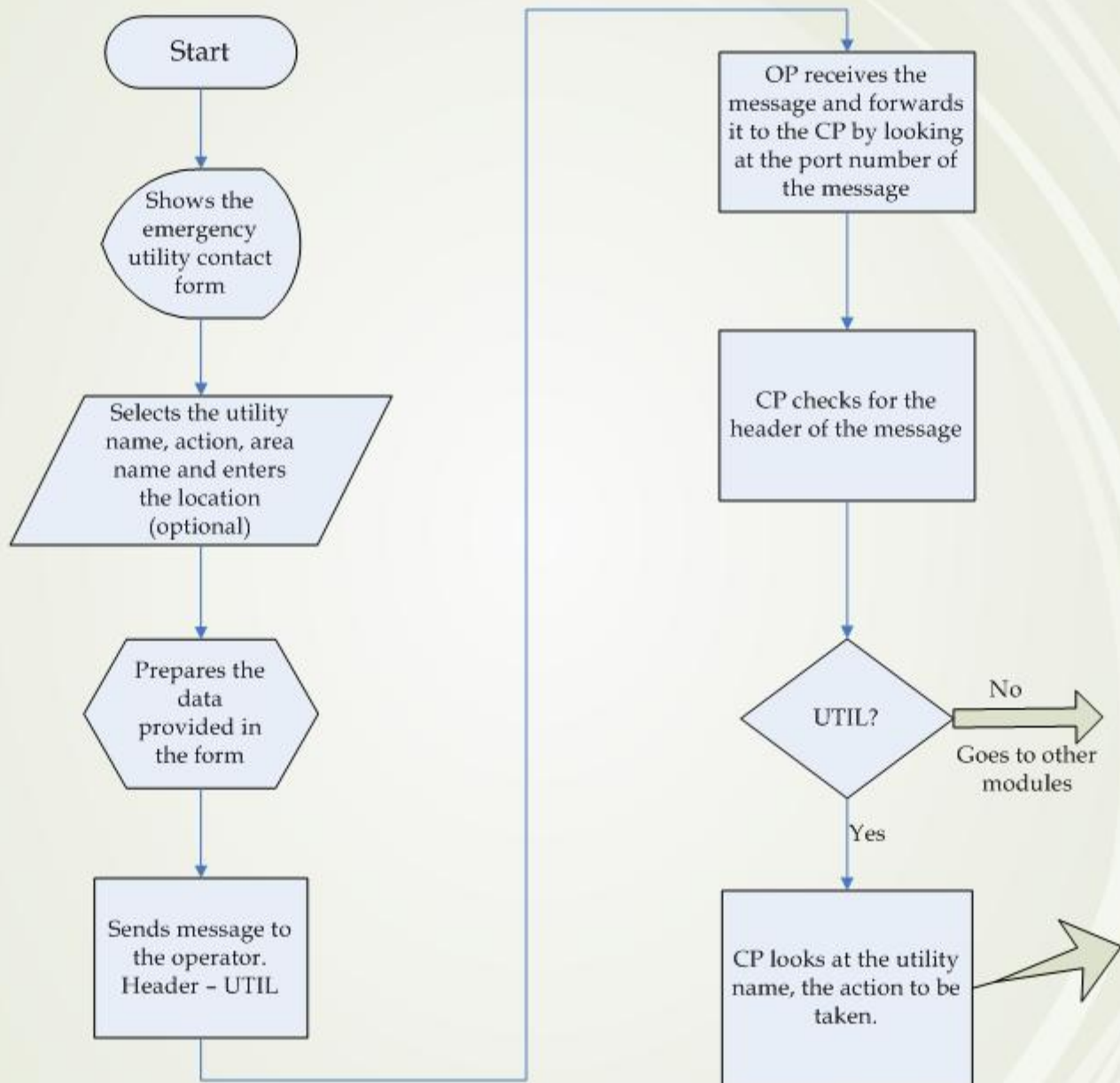


Emergency Utility Contact flowchart

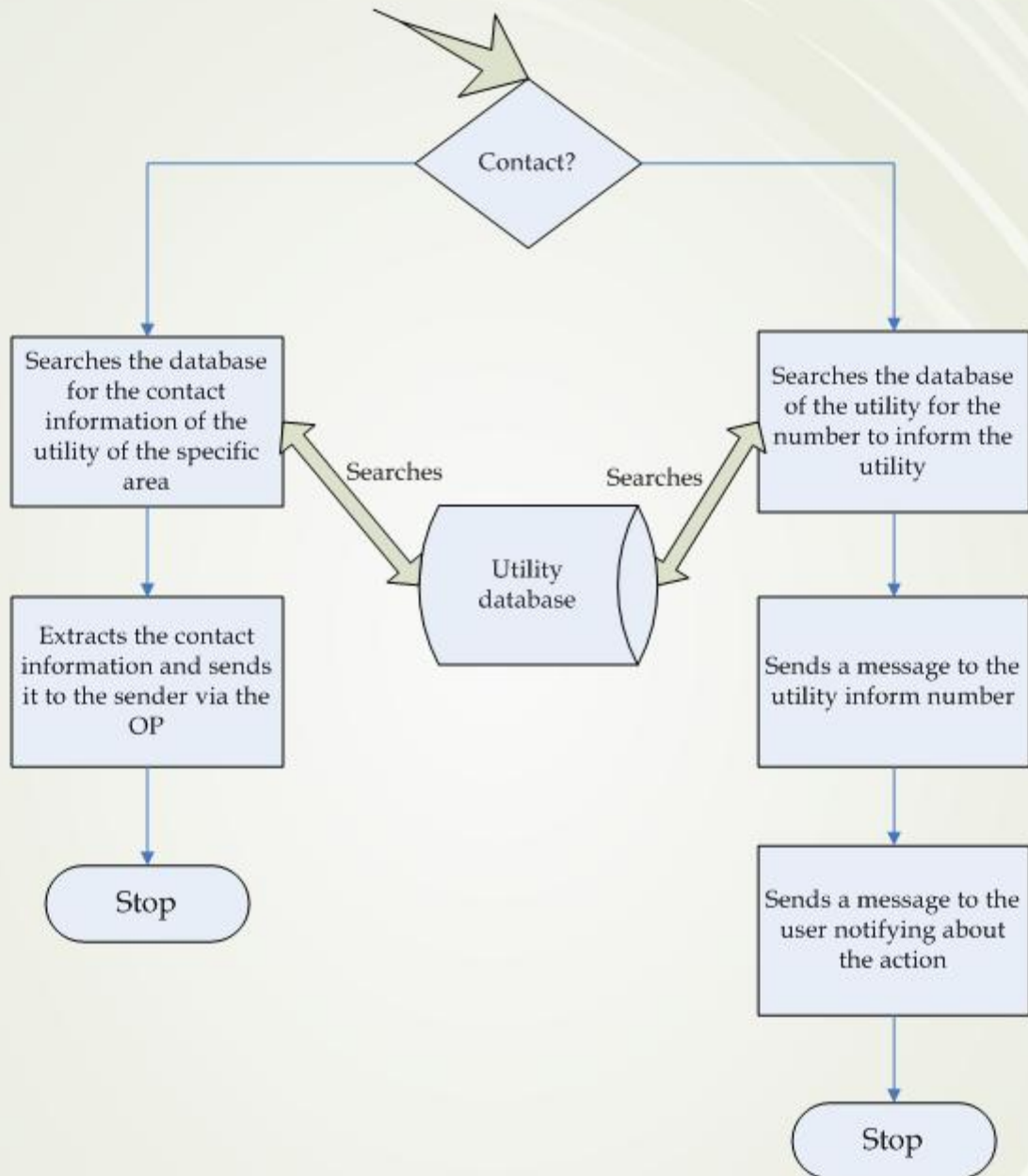
Like other modules, this module will be activated after the button of this module is clicked from the main menu. After the user selects his or her options and presses to proceed then the software prepares the data as the software supports. Here the header is UTIL. On receiving the message the OP forwards it to the port number for which it is for.

When the CP receives the message then it looks for the header – UTIL and if found then proceeds in this module, else to other module. Then the CP looks at the utility name. After getting the name it looks what the user wants it to do. After that it looks for the area name from which the user wanted the help. If the user wants the contact information, then it searches the database for the contact information of the utility. Else it sends a message to the ICE number stored against that utility of that area. In both cases the sender is informed about the result.

Emergency Utility Contact



Emergency Utility Contact (cont)



Software description

MS software

i) Main menu

When the software starts up then this menu is shown. From here one can easily go to his or her desired action just by click on the appropriate button. One thing to notice is that here a button named get result is shown. This is included for this demo version just to get result after other software completes their task.

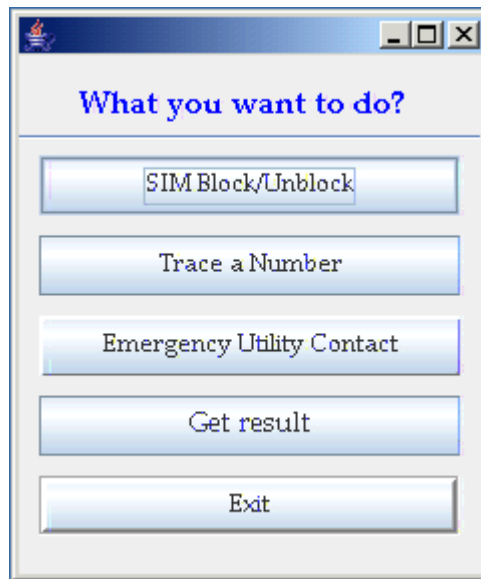
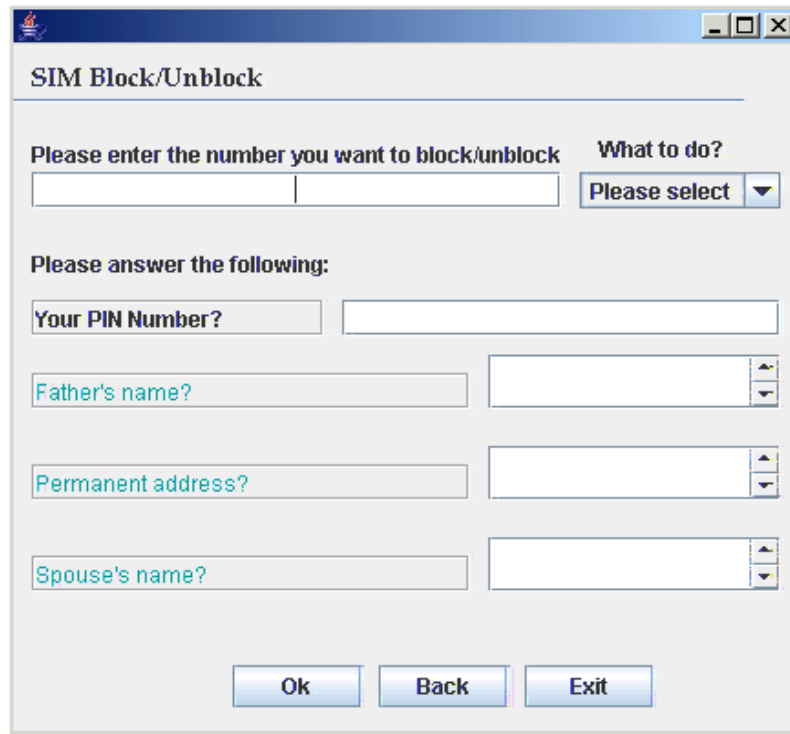


Figure 1. Main menu

ii) SIM Block/Unblock form

This is the form for performing block or unblocks action. This form will appear if the user clicks on the SIM Block/Unblock button. The user would need to select his or her action from the drop down list labeled "What to do?". When this list is clicked then the list of available actions, block or unblock, appears. On pressing OK then sends screen will appear, as shown in figure 10.



SIM Block/Unblock

Please enter the number you want to block/unblock What to do?

Please select ▼

Please answer the following:

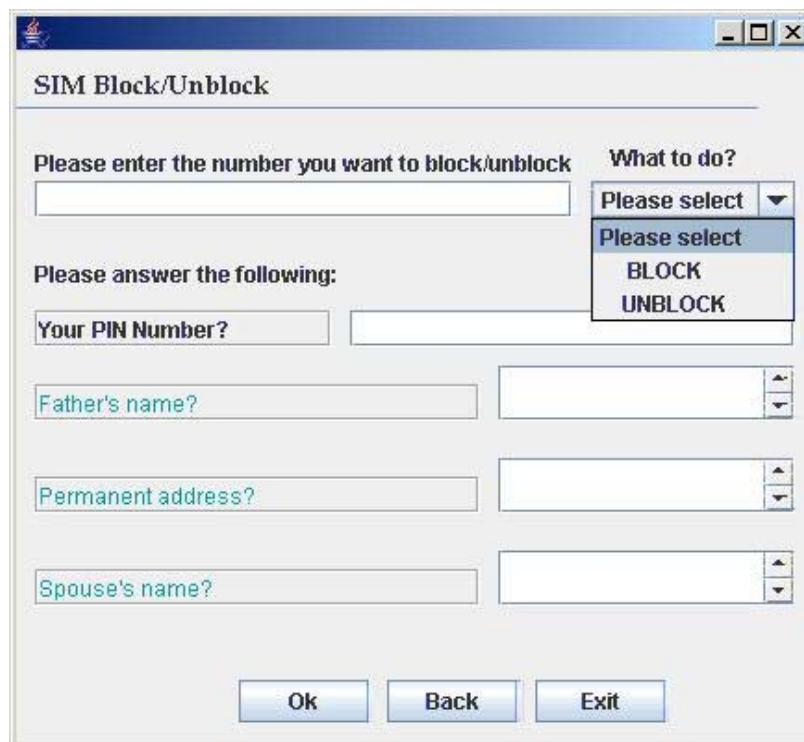
Your PIN Number?

Father's name?

Permanent address?

Spouse's name?

Figure 2. SIM block/unblock form



SIM Block/Unblock

Please enter the number you want to block/unblock What to do?

Please select ▼

Please answer the following:

Your PIN Number?

Father's name?

Permanent address?

Spouse's name?

Please select
 Please select
 BLOCK
 UNBLOCK

Figure 3. SIM block/unblock form showing the available actions in the “What to do?” list

iii) **Trace a number form**

This will appear after the user clicks on the “Trace a Number” button in the main menu. In this form the Trace button will send the data to the OP after the number to be traced is entered.

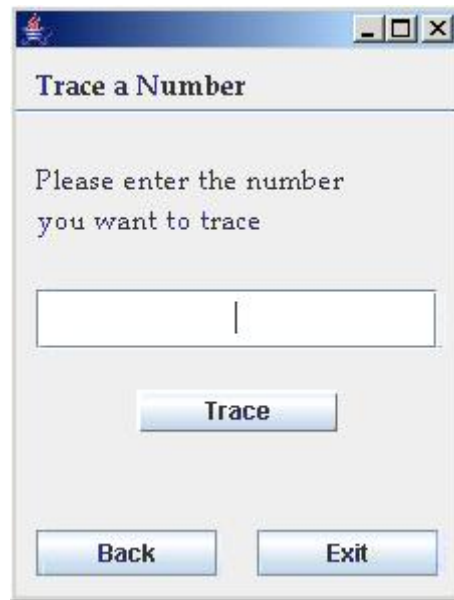


Figure 4. Trace a number form

iv) **Emergency utility contact form**

After the button “Emergency Utility Contact” is clicked in the main menu then this form appears. Here the user would select the name of the utility from the very first list (figure 6) of the form. Then the user would need to select what he or she want to do from the second list (figure 7). After selecting, the area could be selected from the third list of the form (figure 8). On pressing “Go” button the sending screens will be visible if and only if all the selection satisfies the requirement of the software. If the user mistakenly selects utility name other than Hospital or RAB then an error message would be shown (figure 8). As explained before that for the thesis work I used only these two utility names.



Emergency Utility Contact

Please select which utility you want to contact

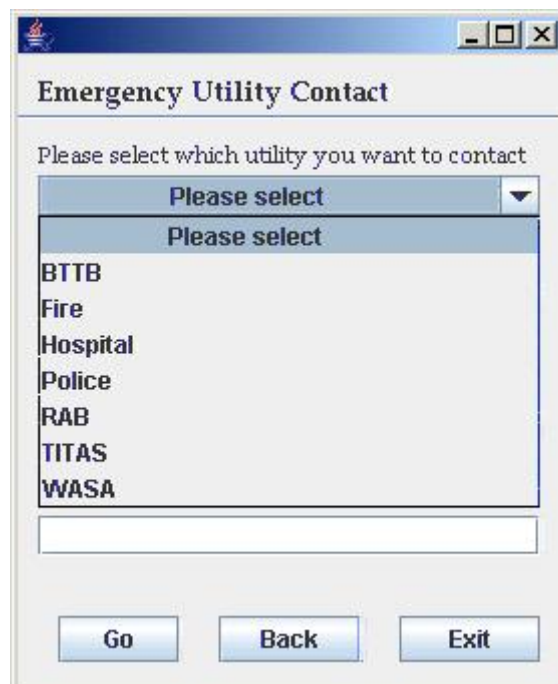
Please select what you want to do?

Please select your area

Any landmark near you

Go Back Exit

Figure 5. Emergency utility contact form



Emergency Utility Contact

Please select which utility you want to contact

Please select

BTTB
Fire
Hospital
Police
RAB
TITAS
WASA

Go Back Exit

Figure 6. Showing the available utility names in the first list

Emergency Utility Contact

Please select which utility you want to contact

Please select

Please select what you want to do?

Please select

Get their contact information

Inform them about an incident

Any landmark near you

Go Back Exit

Figure 7. Showing the available actions in the second list

Emergency Utility Contact

Please select which utility you want to contact

Please select

Please select what you want to do?

Please select

Please select your area

Please select

Agargaon

Airport

Banani

Demra

Dhaka University

Dhanmondi

Elephant Road

Go Back Exit

Figure 8. Showing a part of available areas in the third list



Figure 9. Showing the error if appropriate utility name is not selected

v) **Sending screen**

This screen will be in action after the user successfully enters the data in the form and clicks the proceed button on the form (names are different in each form, they are Go, Ok and Trace).

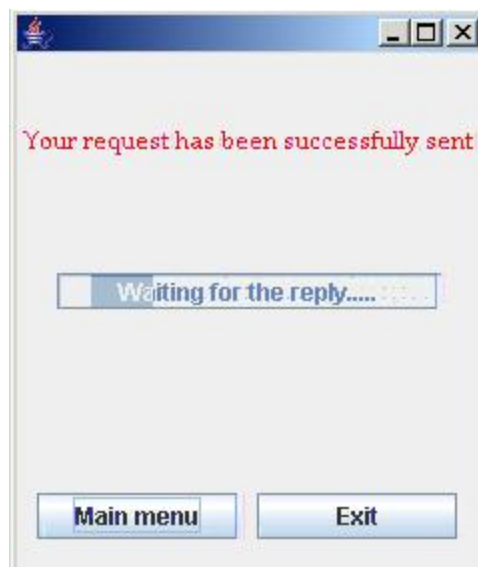


Figure 10. Sending screen

vi) **Result screen**

This screen will appear when the button “Get Result” is clicked from the main menu.

vii) **Exit alert**

This will come in action when the exit button of any form will be clicked. On clicking “Yes” of this alert box the system will terminate else it will remain in the same place.



Figure 11. Exit alert

Only this MS software has such GUI. Other software does not have GUI like this. Only a text area where the message is shown and a button or two is available there. Those are easy to understand. That is why in this section, the MS software has only been described.

Advantage & Disadvantages

There are some advantages and disadvantages in the system like other systems. They are discussed below.

Advantages

- In the current system people have to go to the Operator's office to block or deactivate their SIM when it gets lost. Using the proposed system, one can instantly block their SIM.
- To activate the SIM, one does not need worry to go at the Operator's office with the registration paper; he can do it only by this proposed system
- No transport cost is needed. Only a standard SMS charge will be deducted from his credit.
- Time saving as one does not need to go to operator's office for blocking or unblocking SIM.
- User verification is required for SIM Block and Unblock action. One can not able to block others SIM, no harassment.
- Good for concerned parents. Even anyone changes the SIM and uses another then the set can also be traced.
- The Tracing Module of the system has been thought by concerning about the social matter. No one would be able to trace other, unless the person, who is being traced, gives the permission for tracing his number.
- No need to keep remembers any emergency contact numbers during accident or any such incidents.

- No need to worry about the number of the utility contact responsible for the specific area.
- Provides fast and better services.

Beside these advantages there are some disadvantages of the system. They are discussed below.

Disadvantages

- To deploy the system, a huge amount of money would be needed at the very beginning. So one company cannot initiate it. It needs all the companies to contribute in order to setup the system.
- All the companies needs to be cooperative else this system will not give the desired output.
- Help from Government would also be needed. Investment of money in this project would exert less pressure over the telecom companies.

Future implementation

For further implementation I have planned to enhance some features in the system.

In the SIM Block and Unblock module, I did not make differences between post-paid and pre-paid users. And so there only one database, Home Location Register or HLR, has been taken into account. But in future, Intelligent Network or IN for pre-paid users and HLR for post-paid users should be considered.

In Emergency Utility Contact module, only two utilities I have worked with but in further implementation other four utilities – BTTB, Fire, Police, TITAS, WASA should also be considered. I have worked with areas of Dhaka city only but Districts should also be considered in future implementation.

The authentication process in the Trace module has not been implemented. In future, this feature would be added.

In tracing a number the location of the number or user is extracted from the VLR or in case of failure to detect the location the call record is being scanned for the IMEI. In both cases the VLR is looked to see the location. VLR is updated by the MS in a regular interval of 20-30 minutes, so in the current system the person who is tracing is not getting the latest position. In future I want to use some techniques to get the latest position of the MS. This can be done by sending a packet to the MS and waits for the reply to know the approximate position of the MS. By using this one can know where the MS is from a specific landmark. This means say that a person is at DBC, Gulshan, and the landmark for that region is BRAC Center. So the system will detect the approximate distance of the MS from its BTS. Then it will calculate the distance of the MS from the landmark, BRAC Center. This can be done by deducting the distance from the landmark to the BRAC Center and then will calculate the distance using that remaining values. As

it is my future planning about the system so the details will be decided then to make sure that the system gives result as accurate as possible.

Conclusion

I have tried to explain throughout the paper that how my proposed system would work, about the technical aspects, advantages and disadvantages. From here it can be derived that the system will be very beneficial and profitable both to a user and an operator. Implementing this system is feasible.

From the operators point of view they can have a ransom amount of revenue each month. They will need less people to attend their users for reporting these jobs that will be handled by the system, which is less human resources, thus increasing profits of the Operators. Besides, they are able to provide such services to their valuable subscribers.

The system will save a lot of time, energy and expenses of any user. The user will be comfortable and will stay more secured about their mobile devices. They can easily control his or her SIM if that is lost, without worrying about misusing the SIM. They would be able to trace someone. They can have the emergency contact numbers nearby their hands during any accident.

Lastly, I would like to conclude that the system, that I proposed, would be worth a lot for the people of our country, Bangladesh.

Glossary

CP	Content provider. This provides some services to the operator as per their agreement.
BTS	Base Transceiver Station. Such equipment used in telecommunication.
HLR	Home Location Register. This is a register used in telecommunication for storing information about the status of a post-paid subscriber of an operator.
ICE	In Case of Emergency. A concept used to call a number in emergency to notify him or her about some incident. In my project I used it for indicating the number that is used to inform the utilities about an incident.
IN	Intelligent Network. This is a register used in telecommunication for storing information about the status of a pre-paid subscriber of an operator.
MS	Mobile Station. The other definition of cell phone.
OP	Operator. The telecommunication companies.
RAB	Rapid Action Battalion. An armed force of Bangladesh.
UTIL	This is the short hand of Utility.
VLR	Virtual Location Register. This is a register used in telecommunication for storing information about the location or BTS under which subscriber, of an operator, is.